E. H. S.

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EPIFLORA

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CONTENTS

From the President

This is my last President's letter. When I began the year I had some doubts about whether I would be able to see out the year as President for a variety of reasons; but next month is the Annual Meeting and with some difficulties and considerable help from the committee I have managed.

Today we took the first load of our plants up to Waikanae to be stored at the Griffith's until we move up there in a fortnight's time. So far the tally of cartons packed, ready for removal, is up to 61 but there is still a long way to go. Tomorrow some more plants will be moved - the work seems never ending and this is definitely the last time we shift house. We had 20 years in our first home and 20 years in this one, so the Waikanae house should see us through whatever years we have left.

The epis and aporos are a picture at present. Hopefully we'll be able to grow more plants outside under the trees in Waikanae and we do have a conservatory, though whether all the plants that need more shelter will fit in, remains to be seen. We are looking forward to a more sheltered garden and a really flat section and, hopefully, less wind..

I missed seeing the display at the Hutt show, but gather it was a good one as one would expect at this time of the year. Thanks to Merv and all who helped. We need to publicise the Society as much as possible.

I feel I should say something wise and helpful in this last letter, but it's difficult when all around is chaos and there is so much needing to be done. Instead I'll simply remind you of the need for nominations for the new committee and officials. The society has kept going because everyone has been involved and I am sure next year will be no different. Thanks to you all for being so helpful and understanding. I have appreciated the support you have given me.

Best wishes to you all

Alison Beeston.

16th November 1999

The Programme for 1999

Meetings are at Johnsonville Union Church (Dr. Taylor Terrace) and start at 2.00 pm. Library books etc. are available at 1.30 pm.

December 11th	**AGM and Christmas function**
January 8th	**Bring and Brag** **Photo Competition for all comers** *(what did you learn from John Cheese' talk?)*
February 12th	**Visit to collections**
March 11th	**History of Hoyas**
April 8th	**Guest speaker**

News About People:

Best wishes to **Nola Roser** we are thinking of you at this time..

It was good to welcome back **Mary Hardgrave** from their lengthy trip around some of the out of the way places in Australia. We look forward to hearing all the travellers tales.

Betty Firth:

Betty Firth died in September after a short illness

Betty, though always modest and unassuming, was infectiously enthusiastic, and always supportive. She was wonderfully creative and had a delightful sense of humour. All of us will miss her greatly. We count it as a privilege to have known her.

Our good wishes go to Dyson and all the other members of her family.

The Origin of Epiphyllum Hybrids..

Jane Griffith *gave a talk on this topic at the September meeting...*

What is a hybrid?

It is a plant that is grown from the cross pollination of two parent plants.In contrast a species epiphyllum plant is one that is found in its natural habitat growing epiphytically in Latin America.

If there had been no hybridisation of epis it is unlikely there would have been epiphyllum societies around the world as hybridisation has produced a vast range of colours, shapes and sizes of flowers. Species flowers are usually nocturnal, funnel shaped and white to yellowish.

So who first hybridised epis and how did they do it?

In Britain and Germany people started hybridising epis in the 1820's and 1830's

In Britain *Heliocereus speciousus and Nopalxochia phyllanthoides* were both used as cross pollinators with epiphyllum species. It is believed that the earliest English crosses were between the species *E. ackermanii and H. speciousus*. But proof of this has been difficult to establish as very few *E.ackermanii* reached Europe and within a short time none had survived because of the tremendous climatic differences between the natural habitat of Latin America and Europe. In Germany initially the same parent plants were used for hybridising.

In 1840 E*piphyllum crenatum* was introduced into Europe and was soon being used as a hybridising parent in England, France and later in Germany. Using *Heliocereus speciousus; Nopalxochia phyllanthoides and Selenicereus grandiflorus* to cross with *Epiphyllum crenatum* two French hybridisers – Charles Simon and Lorenzo Courant produced a vast range of colours – yellowish white to strong orange and deep amber – from these crosses. These crosses also produced diurnal flowers in contrast to the nocturnal flowers of the species.

Later in Germany Johannes Nicolai became the first intensive hybridiser in that country. Nearly 300 named hybrids were introduced by him or, after his early death, by his brother. Unfortunately during the First World War almost all of these perished because of the shortage of coal which meant the plants froze in the severity of the winters. Another German, Georg Bornemann, also began large-scale hybridisaation at this time. Unlike Nicolai who hybridised from true species, Bornemann crossed strong, healthy hybrids from England and

Germany to produce extremely healthy plants and flowers of great beauty.

Probably the best known German hybridist was Curt Knebel who started hybridising at the end of the 19th century. Using healthy hybrids from a number of sources plus new species plants he produced a vast range of colours and flower shapes. His aim was to produce a yellow-flowered epi he but did not succeed in this endeavour. "Ernst Guendchen" and "Ackermanii redivivus" are both Knebel hybrids along with many others. Curt Knebel lost his nursery and home during World War 2 when his land was taken over for war needs. Fortunately his hybrids by this time had been widely distributed.

Hybridising didn't start in the United States of America until the 1930's but since that time many American epiphyllum growers have hybridised epiphyllums and registered their new hybrids.

In 1939 a group of epiphyllum enthusiasts met and formed the Nomenclature Committee to standardise names – this included the decision to call plants epiphyllums rather than the European phyllocactus. As you are aware in the late 1990's there is a strong plea from Dick Kohlschreiber and others to seek a new name for epi hybrids as they are not true epiphyllums.

Soon after the Epiphyllum Society of America was formed in 1940 an alphabetical list of hybrids was compiled by Mrs. Gertrude Beahm to assist hybridisers in naming their new cultivars. The idea was to avoid duplicate names. Over the years this list was expanded to become a Directory of Species and Hybrids and in 1996 this directory was completely revised to as accurately as possible list the thousands of epi hybrids which have been registered.

Several hybridists names stand out in America – some of the earlier ones being Cactus Pete, (Dark Daphne, Dracula, Little Sister) the Beahms of Beahm Gardens,(Equator,, Happy Sprite, Kismet) Paul Fort and Garland O'Barr. Fort and O'Barr were the first to obtain yellow flowers – Reward, Discovery and Golden Fleece all being produced by crossing Madonna (a 1937 hybrid from Steele) and Thorinne (an extra large red and violet flower with narrow radiating petals hybridised by Theresa Monmonier) It is not possible to trace back the ancestry any further to ascertain which plant was responsible for the genes which produced the yellow colour because the ancestry of Madonna and Thorinne are unknown. In recent years although there have been many hybridisers two stand out in particular –

Wressey Cocke and George French. Both these men hybridised large quantities of epiphyllums, many of which were grown on and registered by nursery growers. Wressey Cocke was responsible for many of the epis we have in our collections including Innisfree, Kami, Lemon Custard and Fred Boutin and the George French ones known to us include Jennifer Ann and George French.

More on the new regime for importing plants and seeds..

As has been reported on a number of occasions previously, great changes are being made to the regulations governing the importation of plants and seeds to NZ. ***Gordon Purdie*** *recently attended once of the meetings of the Consultative group - here are some notes he wrote..*

On behalf of the Cactus and Succulent Society I attend the ERMA: HSNO New Organisms Consultative Group Meeting today.

There have been 49 applications for new organisms under the Act. 19 have been approved and 21 are stalled (seeking more information from the applicants). All of the applications have been for new organisms into containment. There has been no application to import a new plant species. This apparently concerns some ministers; I am not sure why, it might be that they are concerned that new species might be being brought in illegally.

When we have been importing seed of species that are not on the permitted list MAF has asked for evidence that the species exists in NZ. If the evidence is accepted then the species is added to the list of permitted species. It should have existed in NZ when the Act came into force in 1998. MAF might soon become reluctant to access the evidence and refer the issue to ERMA. It would then become a section 26 determination. There is no fee for a section 26 determination, but ERMA "don't know how long that will last". ERMA said there was a generous use of section 26.

The list of existing species is still being reviewed. ERMA wants it tidied up. As we get

At our mid-winter function - members were asked to create (and wear) an "Epiphytic hat"

Epiphytic hats (and their creators)
- Photos by Roy Griffith

further away from 1998 MAF will become reluctant to review this list, since it will become harder to assess whether a species which exists now existed in 1998.

A Bill to amend the Act has had its first reading. It does not contain anything on new organisms due to controversies about GMOs.

There were some comments about daffodils and orchids. They were not clear to me. It might be clearer when I see the minutes.

Rhipsalis Website.

Dick Kohlshreiber *writes in the latest "Epi-Gram" - the newsletter from the South Bay Epiphyllum Society.*

Although I have been critical of almost everything that appears on the internet in regards to Epiphytic Cacti, there is a website devoted to *Rhipsalis* which, so far, is quite good. The address is:

www.techstar.com/rhipsalis

and is written by Ken Friedman of Bethlehem , Pa. and Derek Butcher in Australia. These two have done a lot of work and research for this website and it shows in the information that they offer. Much of the information is technical but they do have some practical information. Under "fertilizing" they write: "One grower, Walt, describes excellent success with fertilizer. He says his secret for growing large plants is Miracid with its 30% nitrogen and lots of iron; one tablespoonful per gallon of water. If a plant is in bloom or fruit he uses only Miracle Grow. He has also used a combination of the two - one tablespoon of Miracid and one tablespoon of Miracle Grow to two gallons of water. This gives a high phosphorus percentage that helps promote flowering. Sometimes he uses liquid iron to green up the plants.

Maybe I'll try this type of fertilising. I have always thought that high nitrogen doses were bad for cacti and that most cacti don't respond well to high dosages of nitrogen given all at one time.

They have a good page on the geographic distribution of *Rhipsalis* and report that the greatest concentration of *Rhipsalis* species is found in eastern Brazil in the states of Rio de Janeiro, Minas Gerais and Sao Paulo. Habitat photos show that some species grow on tall, pole-like trees that lack dense leaf cover. Other photos show them growing everywhere: on tree trunks and branches, on rock outcrops along the coast and on limbs sticking out from waterfalls. In addition to growing in mountain regions, some species are found in subtropical, humid, semi-deciduous forest. *Rhipsalis* are also found in Bolivia, Argentina, Uruguay, Peru, Ecuador, Venezuela, Surinam and Dutch Guyana. Barthlott has reported *Rhipsalis* from all over Africa including the Ivory Coast, Transvaal, Swaziland, and Cameroon. He also found *R. erythrocarpa* near Mt. Kilimanjaro. Quite a few *Rhipsalis* forms are found in Madagascar. Guillaumet (1972) reported *R. baccifera* found generally as an epiphyte in dense humid forests at sea level up to 1700 metres; *R. horrida* limited to forests on sandy shores of the east coast and *R. suareziana* living on rocks along the dry west coast.

The authors have used a lot of material from Barthlott and Taylor's article that appeared in Bradleya - which is good.

About Plants...

In the July 1998 edition of the ***Epigram***[1] *is the first of a series of articles intended to give a greater understanding of the functions of the various parts of plants. In this one* ***Mel Wilson*** *discusses the function of the root systems.....*

When a seed first germinates, it is not the stem that first appears but the initial root, known as a *radicle*. This is an indication of how important the root system is to a plant, no matter what age. Without a radicle, the new shoot (or *plumule*) would wither and die within a very short period of time as the stored moisture and food in the seed is exhausted. So what exactly do roots do? They support and anchor plants, absorb water and mineral salts, store food which other parts of the plant have manufactured, conduct absorbed materials and food to the stem and are, at times, involved in asexual reproductive processes.

[1]Published by the Epiphytic Cacti and Hoya Society of Australia Inc.

You may have noticed that some plants have a taproot with all other roots coming off this (pull up a thistle and see this type of root system). Other plants just have lots of fibrous roots all emanating from the plant base (pull up some crab grass to see this root system). A taproot system normally has a dominant root from which other roots or *laterals* branch off; these are not normally of equal size and are quite deep rooted. A fibrous root system does not normally have a distinguishable main root, are fairly shallow, are pretty much the same size and the roots all rise from the base of the plant. These are called *adventitious* roots and are found in the *monocotyledons* (eg grasses, lilies and palms) while the tap root systems are found in the dicotyledons (eg epiphyllums, azaleas and eucalypts). *Cotyledons* refer to the number of seed leaves upon germination and are either mono (one) or di (two). A further explanation will be given in a future article on reproduction.

Adventitious roots are those arising from any part of the plant other than an existing root. Some examples would be the aerial roots on epiphyllums or Hoya, roots on cuttings and those arising from the base of monocots (abbreviated). Dicots grown from seed will have a taproot system while a dicot grown from cuttings will have an adventitious root system.

The root hairs are tiny outgrowths found on recently matured areas of the root and are not found at root tips or on older roots. Root hairs grow in between, and adhere to, the soil particles; protecting the soil from erosion and ensuring the soil is firm around the root system. Root hairs are the primary area for the absorption of water and minerals in solution and the total surface area of root hairs for a single plant is quite large.

Soil is the natural medium for most roots and is composed of soil organisms, air, water and dissolved minerals, organic substances such as partially or completely decomposed plant or animal tissues, and solid particles (sand, silt, clay). A soils's structure is dependent upon the combinations of these components. Between each solid component are the soil *pores*, which contain air and water. The larger pores normally hold air while the smaller areas hold water. Soils that consist mainly of larger particles such as Perth's sandy soils have large or macropores and do not hold water very well; soils with finer particles such as clay have mostly small or micropores and these hold water well but may not have sufficient pores with air. Air provides the oxygen necessary for the roots to respire and produce the energy fro growth while soil moisture is the primary source of water for a plant. It is therefore best to have a soil that consists of both large and small pores.

When water is added to a soil, some drains downwards under the force of gravity while a portion is retained in the soil against gravity. This is held in the pores by capillary forces. This

force is dependent upon the size of the pores so a soil with macropores has a low capillary force while a soil with micropores has a high capillary force. Since sandy soils have mostly macropores, they do not hold water very well.

The quantity of water that a soil can hold against gravity is called its field capacity. In order to understand this fully, imagine a pot of dry soil. When water is added it begins to fill all the pores between soil particles; keep adding water and soon all the pores are filled with water and the soil is considered saturated or waterlogged. Once the supply of water is cut off, the soil drains under the force of gravity with the larger pores draining first due to low capillary forces and, in doing so, air is brought back into the soil. When the soil holds as much water as it can against the force of gravity it is considered to be at field capacity. Large particles of soil have a film of water around them while the smaller pores are filled with water and the larger pores with air.

Plant roots are able to take up this water by diffusion, osmosis and imbibition. As the plant uses this water at field capacity the remaining water is left in smaller and smaller pores eventually reaching the stage where the roots cannot extract any more moisture. It is at this point that plants begin to wilt. At temporary wilting point a plant can recover while at permanent wilting point the plant is under so much stress recovery is unlikely. The ability of a plant to survive these conditions varies from species to species, and will be covered in a later article.

Osmosis is the movement of molecules from an area of high concentration (eg soil at field capacity) to one of low concentration (eg a plant root), through a semi-permeable membrane (such as the epidermis of a root hair).

Diffusion is the free movement of molecules from an area of high concentration to an area of low concentration (such as a few drops of food dye gradually dispersing through a glass of water).

Imbibition is the absorption of a substance (such as a paper towel absorbs water)

Soils of different structures vary in the amount of water they can hold before a plant will be unable to extract any further moisture and therefore reach the wilting point. A clay soil can contain 20% water by weight yet, because the water is held so tightly by the micropores, will be totally unavailable to a plant. A plant growing in sandy soil, however, can extract all but

around 3% of the water held in the soil before wilting due to the large pores which hold water quite "loosely".

Whilst roots take up water in the three ways described above they must take up nutrients in a different way. This is called "active uptake" and requires the use of energy called ATP (*adenosine triphosphate*) produced by the plant during respiration in a cell organelle called the *mitochondrion*. This organelle oxidises glucose (the main sugar produced by photosynthesis) to produce ATP. Oxygen is taken up by the roots through diffusion from the large soil pores containing the air.

So, how do the roots carry the water and minerals to the rest of the plant? Just as animals (including humans!) have a vascular system (arteries, veins, capillaries) so too do plants. Plants do not, however, have a heart to pump their blood around their vascular system so how does it all happen? Firstly plants conduct or translocate water and nutrients from the roots in complex tissues called *xylem* structured from dead tubular cells with packing and support. Complex tissues called *phloem* translocate sugar solutions produced during photosynthesis in the leaves. The main cell in this tissue is called a sieve tube and is alive but some packing and support cells are present. In addition to transporting sugars the phloem also translocates hormones and systemic pesticides and herbicides. The phloem can also translocate upwards in spring when buds require energy produced from starches stored in the roots and stems during winter. The xylem and phloem are contained in vascular bundles with the xylem almost always on the inside and the phloem on the outside protected by fibrous cells. In turn, the vascular bundles in dicots are arranged in a circle round the stem while in monocots they are scattered throughout the entire stem.

Throughout the plants life a great deal of the water that the roots take up will evaporate in a process called *transpiration*. This process will be discussed further in a later article but suffice it to say that most transpiration occurs through leaf pores called *stomates*. The drier the outside air around the leaf the greater the rate of transpiration at a given temperature as the water vapour is dispersed quickly. In ideal conditions, transpiration rates are of little consequence as water flow from the roots is continuous. Water flows into the roots as discussed earlier and rises up the xylem through *capillary force*, which pushes water up narrow tubes. If a stem on a healthy plant is cut, water will ooze from the xylem through these forces.

In addition to capillary force, there is also another theorized method of translocation known as either the *transpirational pull theory* or the *cohesion theory*. Water molecules are held tightly together by hydrogen bonds and as each molecule of water evaporates it is replaced by

another molecule behind it from the continuous chain of water running from the stomata through the cell walls, down the xylem and into the plant roots. The greater the temperature the greater the evaporation and, provided water supply is maintained, the greater the amount of water being drawn up. Both methods explain how a tree 60 metres tall can just as easily translocate water from its roots as a seedling 6 millimetres tall.

References

King, E.L. -Plant Function and Nutrition, Technical Publications Trust, Perth, 1992.

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Mealybugs on your Hoyas.....

Most of us, unfortunately, are familiar with Mealybugs. Dealing with infestations on Epiphyllums is not really a problem - as epis can withstand any of the sprays one might wish to use. Hoyas can be more sensitive. In the July Issue of "Fraterna" ***Dale Kloppenburg*** *- sets out a number of ways of dealing with these pests..*

It has come to my attention that a number of people worldwide are having problems with mealybugs on their hoyas. Some have indicated that they are about to quit growing hoyas for this reason alone. Maybe some have already given up. All because of mealybugs.

This should not be an overwhelming problem. Let me make a few suggestions. First, if the infestation on your plants is really severe, take the plants outside (if they are grown in the house). Spray them with Malathion. If you are allergic to sprays, you might want to wear rubber gloves and a long sleeved garment, possibly even a breathing mask. Most of you will not have any trouble, but wash your hands and arms afterwards. Drench the plants. This spray will kill over a long period, so it is really effective. When you have killed the majority of the mealybugs the next step is continued control.

***E. "Reverend Jane"* - grown by Merv Keighley**

Keeping the population in check and very low in numbers is easy with an alcohol spray. Buy some 70% Isipropyl Rubbing Alcohol. It is usually available in pint sized plastic containers, and also quarts or larger. The pint bottle makes an ideal size on which to fit an atomizer spray. Use a mister similar to those on the bottles of window cleaners or bathroom sprayers. I used to dilute the alcohol with water, but for the past three years, I have just used it straight from the bottle. Go over each plant and look for the insects on any tender new growth, in the axils of leaves and on the undersides of leaves hidden in the pot or under other leaves. Lift up the growth from the edge of the pot and spray if they are there. Alcohol is a contact killer and evaporates fast. I have never had any damage to my hoyas - even on tender new growth. Look for the mealybugs also on the peduncles where new flower clusters are developing and on flower umbels. Ants love to farm these insects and alcohol spray will kill them on contact too if you wish.

I do the inspection of my plants nearly every day. This provides a good time to observe new growth and the development of flower peduncles. It also provides a means to see that all plants are watered properly, including a time to see any interesting changes in the plants. Alcohol sprays will also kill aphids, mites, scale and other insects. With scale, don't just pick off the dried crust but spray under it with the alcohol mist to kill all the eggs sheltered by the scale.

Let's not let these small pests get the better of a wonderful hobby! Fight back., be a winner. It is not hard!. You can keep your hoyas exceptionally clean with just a little persistent effort.

Epiphyllum "Reverend Jane"

Merv Keighley *writes about one of his first hybrids*

The story of Revd. Jane. Back in November 1984 I was in my early years of hybridisation. I had no knowledge of who was what. When a couple of epi flowers were open, out came the paint brush and the deed was done!!! There was no working with the background history of the two plants involved. In fact, at that time, I didn't even know that there was a stud list (or family tree)! As luck would have it, the two flowers that were open at the same time back then were *Eden* and *Ruby Snowflake.* The seed set, ripened, and were duly sown. The plants grew and eventually flowered. Great expectations as the buds filled out and started to show colour. As anyone who grows epis knows, what you see on the outside

ain't necessarily what is on the inside. Some flowers were 'ho hum'. They went into the rubbish bin. (Any flower that isn't different shouldn't be kept!). Plant 85/10/2 was starting to open. A little prod here and a blow there speeded up the happening.Oh, my goodness, it's different!! Who can I phone to come and see it? The Griffith's were out that evening, but they surely received a phone call the next day. It was agreed that this plant was worth retaining for a further year. And so it was!!! I had great pleasure in naming the plant Revd. Jane in honour of, at that time, the Revd. Mrs Jane Griffith, who was the founder and push behind the Wellington Epiphyllum and Hoya Society. The plant should be registered this year. I understand that the two parents are the same as the legendary epi *Clown.*

Wellington Epiphyllum and Hoya Society

Annual General Meeting

to be held on
Saturday December 11th. 1999

Business includes election of Committee for 2000

This is your society - so mark this date in your diary - and come and have your say.

Odd Cuttings and Seeds

Cactus Calendars

Here is another option for all people who are looking for a cactus calendar: The German Cactus society (DKG) in cooperation with SKG and G\326K has published the new KuaS-Kalender 2000. The new calendar is 32 x 40 cm and includes 13 nice

pictures of cacti and succulents. The accompanying text is in German and English. The price for one specimen is DM12,50 (+ postal charges). You can order the calendar from: DKG-Geschaeftsstelle Betzenriedweg 44 D-72800 Eningen unter Achalm Germany Fax ++49 7121 880511

Frances Verrity reports that she found the 1999 edition of this calendar in a local calendar shop - so keep your eyes open.

More Web sites - for those with Internet access

Virginia says "come into my parlour" - does she mean website? - she writes ...I talked at the last meeting about setting up a website well I have it well in hand now and, although it is not finished yet - (I wonder if it will ever be finished) if you would like to go and look at it sometime you'll find it at the following address. -

http://www.angelfire.com/co3/hoyagrower/index.html

I hope you enjoy it - I am very appreciative of being able to use photos and copy from the Epiflora and will of course add more photos as my plants flower and I am able to take pictures of them. I thought I might ask at the club if anyone had any other hoya photos I could use.

And Ceropegia sites...

Iztok Lesce, of Slovenia has created a page dedicated to asclepiads http://www.dpks-drustvo.si/jest/Asclepia/ which is linked to from his home page http://www.dpks-drustvo.si/jest/. There are 102 photos of different plants of 20 genera (stapeliads, Hoya, Brachystelma and Ceropegia).

Sage Reynolds, a U.S. member of the International Asclepiad Society, has created a very nice web page devoted to ceropegias:

http://www.users.interport.net/~colsage/cero/cedex.htm

Milk for Mildew.

An article in the Oct 16th New Scientist describes the use of milk as a fungicide to combat powdery mildew.

"Milk's fungicidal powers were discovered by Wagner Bettiol of the environmental laboratory of Embrapa, the Brazilian Agricultural Research Corporation, in Jaguariuna, north of Sao Paulo. Bettiol, who was looking for cheap ways to control plant pests, observed that by-products from milk-processing factories killed powdery mildew on courgettes. So he decided to simply spray fresh milk on the plants to see if it had the same effect. To his surprise, he found that it did. In fact, spraying heavily infected plants twice a week with a mixture of one part cow's milk to nine parts water was at least as good at stopping mildew as the chemical fungicides fenarimol and benomyl, Bettiol discovered."

See http://www.newscientist.com/ns/19991016/newsstory4.html
for the full story.

Future Publication Dates..

EPIFLORA is published quarterly by the Wellington Epiphyllum and Hoya Society.

Comments and contributions are most welcome.
The society aims to encourage discussion and debate; opinions expressed are those of the authors and do not necessarily represent those of the society. It is the policy of the society to publish corrections of fact but not to comment on matters of opinion expressed in other publications.

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Or: griffith@globe.co.nz

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